

REMARKS

1. Claim Rejections – 35 U.S.C. § 103

A. Negri et al. and Gobert

In the Office Action, the Examiner rejected claims 1, 5, 14-15, 19, 25-32 and 34-36 as being unpatentable over Negri et al. in view of Gobert (U.S. Patent No. 5,614,554). The Examiner also rejected claims 6-7 and 20-21 as being unpatentable over Negri et al., in view of Gobert, and in further view of design choice. Applicants respectfully traverse these rejections.

i. Claims 1, 5-7, and 25-28

Independent claim 1 as amended recites (1) a clean air channel without a supercharger having a structure that restores pressure head and subsequently increases the velocity of the airflow, (2) the structure being the sole or primary instrument of restoring pressure head within the clean air channel, and (3) the structure comprising an expansion chamber.

As noted by the Examiner on page 3 of the Office Action, Negri et al. does not disclose an expansion chamber. Additionally, to the contrary of the Examiner's assertion on page 4 regarding paragraph [0005] of the specification, the Negri "plenum" 18 is not capable of performing the same desired functions as an expansion chamber of the instant invention. Negri et al. discloses a "carburetor discharge plenum 18" that is a tube of constant cross-sectional area having a bend or elbow prior to the turbocharger compressor 20. Bends and elbows typically generate system losses. Therefore, Negri et al. also does not disclose a clean air channel without a supercharger having a structure that restores pressure head and subsequently increases the velocity of the airflow or an air channel having a structure that is the sole or primary instrument of restoring pressure head within the clean air channel, as recited in claim 1.

The Office Action attempts to overcome the deficiencies of Negri et al. by relying upon Gobert. Gobert discloses a system that uses an expansion chamber 30 to suppress noise created by a mechanical supercharger 5. The supercharger of Gobert, not the expansion chamber or any other structure of a clean air channel, is the primary means of restoring pressure head in the conduit 25. Therefore, similar to Negri et al., Gobert likewise does not disclose a clean air channel without a supercharger having a structure that restores pressure head and subsequently increases the velocity of the airflow or a

clean air channel having a structure that is the sole or primary instrument of restoring pressure head within the clean air channel.

Claim 1 also recites that (4) the expansion chamber is located in an area directly in front of the inlet of turbocharger, and (5) the velocity of the airflow is increased immediately prior to delivery of the airflow to the turbocharger. However, Negri et al. discloses a bend and Gobert discloses a junction 27 in front of the inlet to a compressor that would lead to a decrease in velocity. Accordingly, neither Negri et al. nor Gobert disclose an expansion chamber located in an area directly in front of the inlet of the turbocharger or that the velocity of the airflow is increased in an area immediately prior to delivery of the airflow to the turbocharger. Therefore, Applicants respectfully submit that even if one were to combine Negri et al. with Gobert, a number of claim 1 limitations would remain absent.

a. Claims 5 and 25-28

Claims 5 and 25-28 depend upon claim 1 and should be allowable for similar reasons given previously. Additionally, claim 26 recites a clean air channel redirecting the airflow, the direction of the airflow exiting an outlet of the air filter being at least approximately 180 degrees from the direction of the airflow entering the inlet of the turbocharger. Neither Negri et al. nor Gobert discloses an air filter outlet directing airflow in a direction at least approximately 180 degrees from the direction of airflow entering a turbocharger inlet.

Claim 28 recites a diffuser and an expansion chamber that both redirect the direction of airflow within the clean air channel. Neither Negri et al. nor Gobert discloses a diffuser and an expansion chamber that are both capable of redirecting airflow within a clean air channel.

b. Claims 6 and 7

The Examiner rejected claims 6 and 7 as being unpatentable over Negri et al., in view of Gobert, and in further view of design choice. Claims 6 and 7 depend upon independent claim 1. As noted above, even if one were to combine Negri et al. with Gobert, a number of claim 1's limitations would remain absent. Applicants respectfully submit that design choice would not cure these deficiencies.

ii. Claims 14, 15, 19-21, and 29-31

Independent claim 14 as amended recites (1) a clean air channel without a supercharger having a structure that restores pressure head and subsequently increases the velocity of said airflow, and (2) the structure being the sole or primary instrument of restoring pressure head within the clean air channel. As noted above in Section A, Part i., neither Negri et al. nor Gobert discloses a clean air channel without a supercharger having a structure that restores pressure head and subsequently increases the velocity of the airflow or a clean air channel having a structure that is the sole or primary instrument of restoring pressure head within the clean air channel.

Additionally, independent claim 14 recites “means for restoring pressure head...” which is a means-plus-function element and should be interpreted in accordance with 35 U.S.C. § 112, ¶ 6. Accordingly, the claims must be interpreted to cover the recited function. *See* MPEP § 2181. In particular, claim 14 recites a means for (3) restoring pressure head to compensate for system losses incurred from the airflow traveling at least a portion of the clean air channel and (4) subsequently increasing the velocity of the airflow within the clean air channel in an area directly in front of the inlet of the turbocharger.

Negri et al. does not disclose nor perform the recited function of restoring pressure head to compensate for system losses incurred from the airflow traveling at least a portion of the clean air channel. Furthermore, neither Negri et al. nor Gobert discloses or performs the recited function of increasing the velocity of the airflow within the clean air channel by a means located in an area directly in front of the inlet of the turbocharger. Therefore, even if one were to combine Negri et al. with Gobert, Applicants respectfully submit that a number of limitations of claim 14 would remain absent.

a. Claims 15, 19, and 29-31

Claims 15, 19, and 29-31 depend upon claim 14 and should be allowable for similar reasons. Additionally, claim 30 recites that the airflow travels in a direction exiting an outlet of the air filter being at least approximately 180 degrees from a direction of the airflow entering the inlet of the turbocharger. Neither Negri et al. nor Gobert discloses redirecting the airflow within a clean air channel 180 degrees from the outlet of an air filter to the inlet of a turbocharger. For instance, the direction of the airflow in Gobert at the outlet of the air filter and at the inlet of the turbocharger is the same.

Claim 31 as amended recites an angular diffuser in fluid communication with the expansion chamber at approximately a 90 degree angle between a direction of the airflow exiting an outlet of the angular diffuser and a direction of the airflow exiting an outlet of the expansion chamber. Neither Negri et al. nor Gobert discloses an angular diffuser in fluid communication with an expansion chamber at approximately a 90 degree angle.

b. Claims 20-21

The Examiner rejected claims 20 and 21 as being unpatentable over Negri et al., in view of Gobert, and in further view of design choice. Claims 20 and 21 depend upon independent claim 14. As noted above, even if one were to combine Negri et al. with Gobert, a number of claim 14 limitations would remain absent. Applicants respectfully submit that design choice would not cure these deficiencies.

iii. Claim 32

Independent claim 32 as amended recites (1) a clean air channel having a structure that restores pressure head and subsequently increases the velocity of said airflow, (2) a diffuser being configured to have an interior surface that both longitudinally increases in cross-sectional area and radially diverts a flow of the airflow, and (3) an expansion chamber being configured to divert the flow of said airflow. Negri et al. does not have a clean air channel having a structure that restores pressure head and subsequently increases the velocity of the airflow. Additionally, a “diffuser” is “an expansion or area increase intended to reduce velocity in order to recover the pressure head of the flow.” FRANK M. WHITE, FLUID MECHANICS 345 (Anne Murphy et al. eds., McGraw-Hill, Inc.)(2nd ed. 1986). Hence, Negri et al. does not disclose a diffuser. Moreover, on a page 3 of the Office Action, the Examiner acknowledged that Negri et al. does not disclose an expansion chamber.

Gobert does not cure all of these deficiencies. For instance, Gobert does not disclose a diffuser configured to have an interior surface that both longitudinally increases in cross-sectional area and radially diverts a flow of the airflow. Gobert also does not disclose an expansion chamber being configured to divert the flow of an airflow. Therefore, Applicants respectfully submit, that even if one were to combine Negri et al. with Gobert, a number of claim 32 limitations would remain absent.

iv. Claims 34-36

Independent claim 34 as amended recites a clean air channel having a structure located in front of an inlet of the turbocharger that restores pressure head and subsequently increases the velocity of the airflow. As noted above in Section A, Part i., neither Negri et al. nor Gobert discloses a clean air channel having a structure located in front of an inlet of the turbocharger that restores pressure head and subsequently increases the velocity of the airflow.

Additionally, independent claim 34 recites means for both (1) restoring pressure head after the airflow has traveled at least a portion of the clean air channel and (2) redirecting the airflow at least approximately 90 degrees from a direction of the airflow exiting the outlet of the air filter to a direction of the airflow entering an inlet of the turbocharger. This is a means-plus-function element and should be interpreted in accordance with 35 U.S.C. § 112, ¶ 6.

Neither Negri et al. nor Gobert discloses both of these recited functions. Negri et al. discloses an elbow in the induction passage. However, an elbow would typically create additional system losses and not restore pressure head. Additionally, Gobert does not disclose a means for restoring pressure head after the airflow has traveled at least a portion of the clean air channel that also redirects airflow at least approximately 90 degrees. For instance, as shown in Figure 1 of Gobert, the nozzle 28, the supercharger 5, and the expansion chamber 30 provide straight passages for the airflow and do not redirect the airflow. Therefore, even if one were to combine Negri et al. with Gobert, Applicants respectfully submit that a number of claim 34 limitations would remain absent.

Dependent claims 35 and 36 depend upon claim 34 and should be allowable for similar reasons. Additionally, claim 36 recites a clean air channel redirecting the airflow, wherein the airflow travels in a direction exiting an outlet of the air filter being at least approximately 180 degrees from the direction of the airflow entering the inlet of the turbocharger. Neither Negri et al. nor Gobert discloses an air filter outlet directing airflow in a direction at least approximately 180 degrees from the direction of the airflow entering a turbocharger inlet.

B. Negri et al., Gobert, and Beckley et al.

In the Office Action, the Examiner rejected claims 2, 8, 16, 22, and 33 as being unpatentable over Negri et al., in view of Gobert, and further in view of Beckley et al. (U.S. Patent No. 6,158,082). The Examiner also rejected claims 3-4, 9-13, 17-18, and 23-24 as being unpatentable over Negri et al., in view of Gobert and Beckley et al., and in further view of design choice. Applicants respectfully traverse these rejections.

i. Claims 2 and 8

Dependent claims 2 and 8 depend upon independent claim 1. As noted above in Section A, Part i., independent claim 1 is allowable over Negri et al. and Gobert. Beckley et al. does not cure the deficiencies presented by Negri et al. and Gobert with respect to independent claim 1, at least in part, because it does not suggest (1) an expansion chamber having an increased cross-sectional area relative to a cross-sectional area of a portion of a clean air channel immediately proceeding the expansion chamber, nor (2) restoring pressure head within an expansion chamber to compensate for losses incurred from the airflow traveling at least a portion of the clean air channel such that the velocity of the airflow is increased immediately prior to delivery of the airflow to the turbocharger. Therefore, dependent claims 2 and 8 should be allowable for similar reasons as independent claim 1.

ii. Claims 3-4 and 9-13

The Examiner rejected claims 3-4 and 9-13 as being unpatentable over Negri et al., in view of Gobert and Beckley et al., and in further view of design choice. Claims 3-4 and 9-13 depend upon independent claim 1. Even if one were to combine Negri et al. with Gobert and Beckley et al., a number of claim 1 limitations would remain absent. Applicants respectfully submit that design choice would not cure these deficiencies.

a. Claims 3-4, 9-10, and 13

The Examiner stated on page 5 of the Office Action that “[o]ne having an ordinary skill in the turbocharged internal combustion engine art, would have found the radius of the bell-mouth transition being approximately 20%, and from approximately 3 to approximately 30% of the effective diameter of the inlet of the turbocharger; and said plenum has a cross-sectional area lowering flow velocity through said plenum to less than 75 m/s, as a matter of design choice.” However, neither Negri et al, Gobert, nor Beckley et al. explicitly discloses any of these claim limitations. Accordingly, the combination of Negri et al. with Gobert and

Buckley et al., even if such a combination could be properly made, in view of design choice does not yield the additional limitations of claims 3-4, 9-10 and 13.

The Examiner also stated on pages 6-7 of the Office Action that “there is nothing in the record, which establishes that the claimed dimension and cross sectional area, presents a novel of unexpected result (See *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975)).” However, as the Federal Circuit noted, “[t]o require [an applicant] to include evidence and arguments in the specification regarding whether [a limitation] was a matter of ‘design choice’ would be to require patent applicants to divine the rejections the PTO will proffer when patent applications are filed.” *In re Chu*, 66 F.3d 292, 298 (Fed. Cir. 1995)(distinguishing *In re Kuhle*, 526 F.2d. 553). Furthermore, the Federal Circuit has stated that “evidence of a suggestion, teaching, or motivation to combine” “must be clear and particular.” *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999). The Examiner has not explained what specific understanding or technical principle would have suggested the combination of Negri et al. with Gobert and Beckley et al. Therefore, Applicants respectfully submit that the Examiner’s design choice rejections have been overcome.

b. Claims 11-12

The Examiner on page 7 of the Office Action, states that “[o]ne having an ordinary skill in the turbocharged internal combustion engine art, would have found the cone angle being approximately 12 degrees, and in the range of approximately 4 to approximately 16 degrees, as a matter of design choice, depending on the engine requirements.” However, the Examiner also has not explained what specific understanding or technical principle would have suggested the combination of Negri et al., Gobert, and Beckley et al. *See id.*, 175 F.3d at 999. Therefore, Applicants respectfully submit that the Examiner’s design choice rejections have been overcome.

iii. Claims 16 and 22

Dependent claims 16 and 22 depend upon independent claim 14. As noted above in Section A, Part ii., independent claim 14 is allowable over Negri et al. and Gobert. Beckley et al. does not cure the deficiencies presented by Negri et al. and Gobert with respect to independent claim 14. Therefore, dependent claims 16 and 22 should be allowable for similar reasons as independent claim 14.

iv. Claims 17-18 and 23-24

The Examiner rejected claims 17-18 and 23-24 as being unpatentable over Negri et al., in view of Gobert and Beckley et al., and in further view of design choice. Claims 17-18 and 23-24 depend upon independent claim 14. Even if one were to combine Negri et al. with Gobert and Beckley et al., a number of claim 14 limitations would remain absent. Applicants respectfully submit that design choice would not cure these deficiencies.

The Examiner stated on page 5 of the Office Action that “[o]ne having an ordinary skill in the turbocharged internal combustion engine art, would have found the radius of the bell-mouth transition being approximately 20%, and from approximately 3 to approximately 30% of the effective diameter of the inlet of the turbocharger; and said plenum has a cross-sectional area lowering flow velocity through said plenum to less than 75 m/s, as a matter of design choice.” However, neither Negri et al, Gobert, nor Beckley et al. explicitly discloses any of these claim limitations.

Accordingly, even if one skilled in the art were to combine Negri et al. with Gobert and Beckley et al., the additional limitations of claims 17-18 and 23-24 would remain absent. Moreover, the Examiner has not explained what specific understanding or technical principle would have suggested the combination of Negri et al. with Gobert and Beckley et al. Therefore, Applicants respectfully submit that the Examiner’s design choice rejections have been overcome.

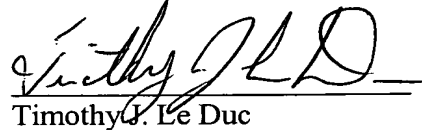
v. Claim 33

Dependent claim 33 depends upon independent claim 32. As noted above in Section A, Part iii., independent claim 32 is allowable over Negri et al. and Gobert. Beckley et al. does not cure the deficiencies presented by Negri et al. and Gobert with respect to independent claim 32. Therefore, dependent claim 33 should be allowable for similar reasons as independent claim 32.

SUMMARY

Applicants respectfully submit that all of the pending claims are in condition for allowance and seek early allowance thereof. If for any reason the Examiner is unable to allow the application but believes that an interview would be helpful to resolve any issues, the Examiner is respectfully requested to call the undersigned at (312) 321-4277.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Timothy J. Le Duc", written over a horizontal line.

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